



NUCLEAR DIVISION NEWS

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 3 No. 14

Thursday, October 5, 1972

QUESTION BOX

If you have questions on company policies, benefits, etc. or any other problems with which we might help, just let us know. Drop your inquiry in the mail to the Editor, Nuclear Division News. (Or telephone it in to your plant news representative... see page two.) You may or may not sign your name. We will not use your name in the paper.

Questions are referred to the proper authorities for as accurate and honest an answer as possible. Each query is given serious consideration for publication.

Answers may be given to employees personally if they so desire.

QUESTION: Please explain how the Carbide Pension Plan is funded and what insurance or guarantee is provided that pension payments will be provided in future years.

ANSWER: In order to have enough money to pay employees their pensions when they retire, Union Carbide puts aside money each month for all employees on the payroll who are 25 years of age or older. This money is turned over to the Prudential and Metropolitan Insurance Companies for them to invest and manage for the sole purpose of providing pensions to employees.

Since the Atomic Energy Commission reimburses Carbide for wages and benefit plan expenses for Nuclear Division employees, there is a separate contract for the Nuclear Division.

The Nuclear Division fund is maintained at a level actuarially calculated to provide pensions to all Nuclear Division employees when they retire. Allowance is also made for the payment of pensions later to employees who have terminated with "vested rights."

QUESTION: In wage consideration, is any thought given to Paducah employees having a higher consumer index rating than Oak Ridge, plus the fact that they also "enjoy" paying a state income tax in Kentucky?

ANSWER: The "Consumer index rating" referred to in the question is assumed to mean the Bureau of Labor Statistics Consumer Price Index, the official name of which is Consumer Price Index for Urban Wage Earners and Clerical Workers. The Index is designed to measure the change in prices at a given location and is

not designed for an inter-city comparison. This index does not include either Paducah or Oak Ridge among the cities which are surveyed. Either location would be considered under the index as "Non-metropolitan South." Therefore, this index is not available for determining differences, if any exist, in living costs between Paducah, Ky., and Oak Ridge, Tenn.

State income tax is not a factor in determining area wages.

QUESTION: Given the following facts, why does Carbide pay Employee A a larger salary than Employee B?

Employee A: 2 years of college (no business subjects), 7 years with Carbide (worked previously during summer and a short while as full-time before present employment), has position of clerk-typist, not interested in furthering this position.

Employee B: High school graduate (emphasis on shorthand, typing and bookkeeping), approximately 40 hours of college credit by extension courses, 10 years with Carbide (4 years of office experience elsewhere), has position as secretary, is interested in furthering this position.

Is the salary difference because of the formal education? Does ability and willingness not count anything with Carbide?

ANSWER: The information given for Employee A and Employee B is not sufficient to determine why Carbide would pay Employee A more if, in fact, Carbide does pay Employee A more. In the absence of more complete facts, one would ordinarily expect B to be at a

(Continued on page 8)

Two new division superintendents named at Oak Ridge Gaseous Diffusion Plant

The appointments of two division superintendents at the Oak Ridge Gaseous Diffusion Plant have been announced by Robert A. Winkel, plant superintendent.

A.J. Legeay has been named superintendent of the Operations Division, and Frank Strang will head the newly-established Barrier Manufacturing Division.

Legeay, who has been superintendent of the Planning and Technical Support Division at the Paducah Gaseous Diffusion Plant, succeeds Kenneth W. Sommerfeld, who was recently appointed assistant plant superintendent at ORGDP. As head of the Operations Division, Legeay will be responsible for cascade operations, power and utilities, chemical operations and long-range planning.

A native of McCracken County, Ky., Legeay attended Notre Dame University where he received his bachelor's and master's degrees in chemical engineering. He joined Union Carbide Corporation in 1952 when the Paducah plant was under construction.

Legeay is married to the former Marion Riley of Paducah. They have three sons.

Strang, a native of Tenefly, N.J., received his bachelor of science degree in chemical engineering from Brooklyn Polytechnic Institute. He worked for a short period for American Cyanamide and the Kelox Corporation before joining Union Carbide in 1945.

He assisted in the start-up of the cascade at ORGDP and held positions of increased responsibility, including assistant cascade coordinator and, most re-



Legeay

Strang

cently, superintendent of the K-32 area.

In his new position, Strang will have overall responsibility for the barrier program from the raw materials to the finished product stages.

Strang and his family live at 105 Albany Rd., Oak Ridge.

United Fund optimism

Advance reports on the United Fund front throughout the Nuclear Division look good! One entire division, the Accounting and Budget Division in Y-12, has pledged a 100 percent, continuous payroll deduction, with all giving needed shares.

Hank Stoner, Oak Ridge director, voiced optimism that the \$356,000 would be reached. Paducah UF chairmen voiced the same optimism.

Complete returns from the drive will be tabulated in the next issue of NUCLEAR DIVISION NEWS.



CORPORATE CONTRIBUTION — Roger F. Hibbs, President of the Nuclear Division, presents Union Carbide's contribution of \$15,000 to the Anderson County United Fund. Receiving the corporate gift is James F. Young, drive chairman for the county. Henry H. Stoner, superintendent of Assembly in Y-12, and drive chairman for the three Oak Ridge plants, looks on from the left.

NUCLEAR DIVISION SAFETY SCOREBOARD

Time worked without a lost-time accident through September 28:

Paducah	31 Days	194,000 Man-Hours
ORGDP	64 Days	851,000 Man-Hours
ORNL	81 Days	1,564,818 Man-Hours
Y-12	345 Days	12,705,000 Man-Hours

Safety is everyone's concern!

ORGDP man spurs activity in Roane for mentally retarded, handicapped

"When I see one child walk toward me that heretofore was unable to walk, I know that any effort I have extended in his behalf has been blessed many fold, and my time has been well spent." So spoke C. R. Lay, a shift supervisor in ORGDP's Separations Systems. Lay was recently honored in his community by the Roane County Association for Retarded Children and Adults for the extra time he had given the cause from his busy life.

A full-page story in the Roane County News recently gave the story of this ORGDP man and how he has helped the cause of the retarded in the surrounding area. A plaque was presented to him, reading: "In appreciation of your untiring and devoted services as president in 1970-72."

Priority needs

One of the first tasks Lay saw in 1970 was a census throughout the county to determine who the retarded were, where they lived, and the extent of their handicap. This, coupled with suggested programming from the Tennessee and the National Associations for the Retarded established programs and facilities on the local level.

The local association was founded by the Rev. Robert Mayes in 1967. One of his dreams was the establishment of a sheltered workshop program for young adults. However, Lay's studies revealed that there was a greater need among younger retarded children in the county, and the Association agreed to give top priority to a day care program for these young children.

After nine months of planning, submitting applications for state, federal and private aids and grants, and fund raising on the local level, the day care program took shape.

Now at state level

A group of 12 children enrolled in the center on Gallahar Road, Kingston. The school was licensed for that number, but before the year was out more than double that number was in school.

Lay has now been appointed to the Board of Directors of the Tennessee Association for Retarded Children and he will serve on the state level. He also is looking forward to working with the various phases of the different programs

sponsored by the Roane group, and eagerly looks to the goal for next year that includes an adult activity program for the retarded.

Lay lives with his wife, Lorena, and their son in the Edgewater Estates near Kingston. The entire family works with dedication for the retarded.

Others praised

And, the Roane newspaper, points out, "he is quick to laud the efforts of others. 'Had it not been for the financial support and the active participation of many Roane Countians, our program would not be the success that it is. Our future plans are all projected on the philosophy that there are many willing to work for, and support financially, programs that can help these less fortunate individuals.'"

"His philosophy of service to others are reflected in his life style and his efforts have made a difference in the lives of many!" concludes the Roane newspaper.

Materials engineering meet sets several ORNL papers

Several ORNL staff members will be presenting papers at the 1972 Materials Engineering Congress in Cleveland, Ohio, October 16-19.

Following are the papers to be presented:

"Relevance of Tracer Diffusion Experiments to Problems in Nuclear Systems" by Ted S. Lundy and Richard E. Pawel.

"Thermotransport of Cadmium and Tellurium in Sodium and Potassium Chlorides" by Paul T. Carlson of ORNL and D. Heitkamp of the Kernforschungsanlage, Institut für Physikalische Chemie in Jülich, West Germany.

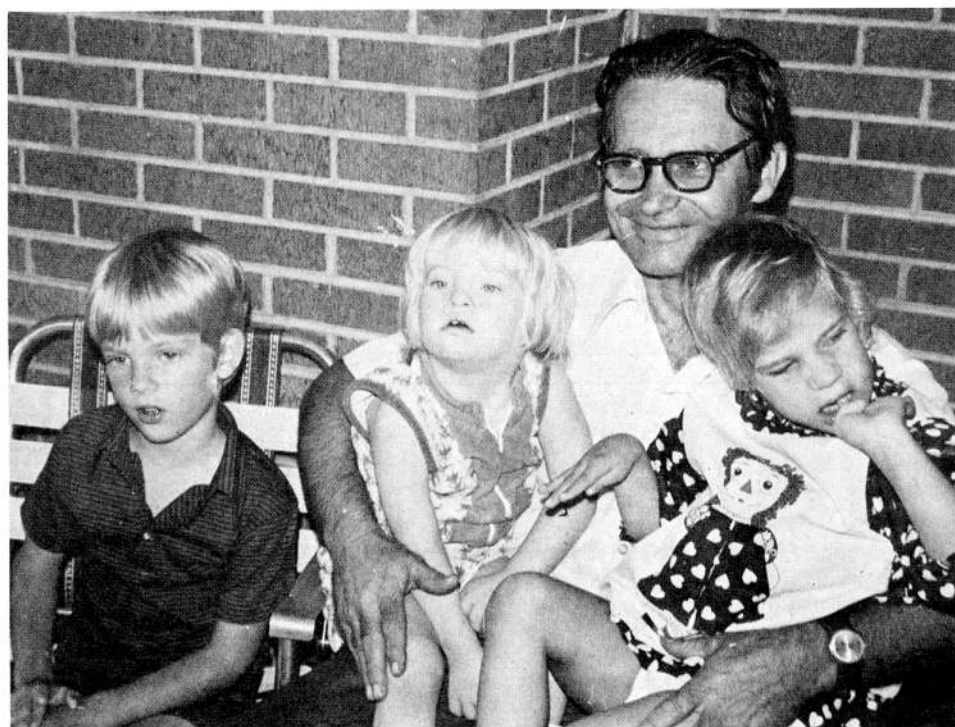
"Materials and Fracture Investigations of the Heavy Section Steel Technology Program" by Fountain J. Witt and Domenic A. Canonico.

"The Effect of Section Size on Fracture Behavior" also by Witt and Canonico.

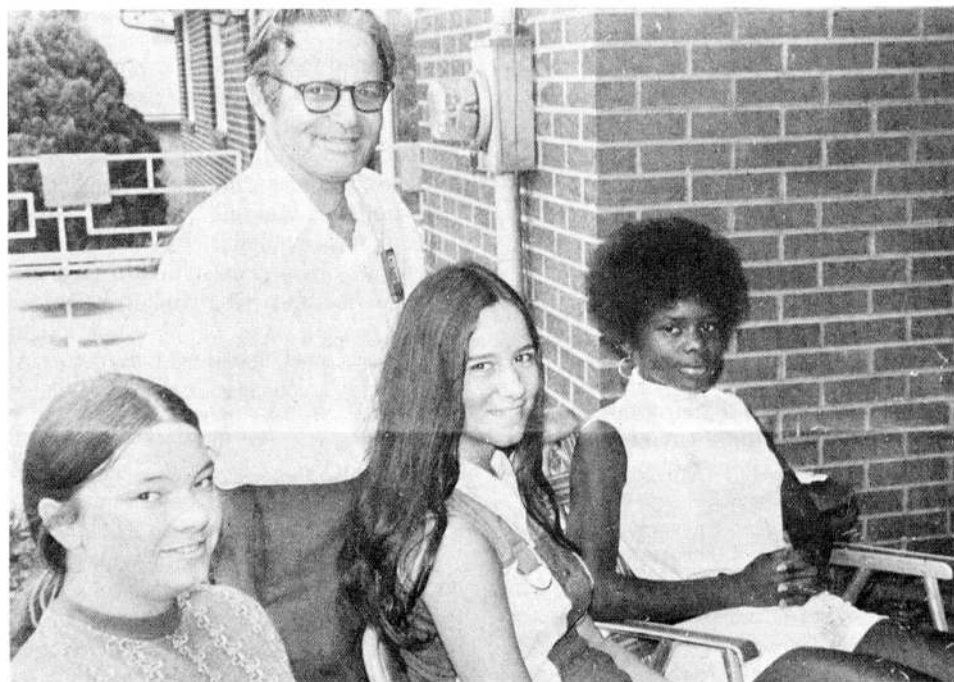
"Quantitative Representation of Sheet Textures" by Robin Williams.

Several ORNL staffers at metallographic meet

ORNL Metals and Ceramics Division staff members participated in several roles at the Fifth Annual Meeting of the International Metallographic Analysis Society last month in Chicago, C.K.H. Dubose, a member of the board of directors of IMS, was chairman of the International Metallographic Exhibit, which is co-sponsored by the International Metallographic Analysis Society and the American Society for Metals. Robert J. Gray was program chairman for the technical meeting and presented two papers, "An Observation on the Position of Metallography in the Examination and Development of Prosthetic Appliances" and "The Detection of Strain-Induced Martensite in Types 304 and 301 Stainless Steels by Epitaxial Ferromagnetic Etching." He also had an entry in the Metallographic Exhibit. A paper by Robert S. Crouse and Tommy J. Henson, "Beam Scanning System Modification for a Shielded Microprobe," was presented by Crouse. William H. Pechin also attended.



LEAST OF THESE — C.R. Lay, division shift superintendent at ORGDP, was cited recently for his services to the Roane County Association for Retarded Children and Adults. Here he is seen with three of his "charges" Jimmy McCuiston, Lori Chadwick and Judy Miller, special friends of his.



CAPABLE ASSISTANCE — C.R. Lay is shown with the clerical help which manned the Community Center in Roane County this summer. From left are Sue Caldwell, on loan from Roane State Community College; Marcia Armour; and Ernestine Willis.



PLAQUE PRESENTED — A plaque of appreciation is presented C.R. Lay for two years of dedicated work with the retarded of Roane County. Mrs. Kenneth McCuiston, president of the Roane County Association for Retarded Children and Adults, presents Lay the plaque.

NUCLEAR DIVISION NEWS

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CARBIDE

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NUCLEAR DIVISION

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IT'S OFFICIAL — Several members of the Oak Ridge-Knoxville Chapter of the American Society of Certified Engineering Technicians were on hand for the signing of the proclamation of October 8-14 as Engineering Technicians Week in Tennessee. Left to right are Jack Thompson, Y-12, Ed White, Y-12, Ralph Dial, ORNL, Bradley Napier, Y-12, the Governor, Charles McAllister, Y-12, John Bonavita, Y-12 and Henry Penland, ORNL.

Foreign travel planned by ORNL staff members

Speaking at several foreign meetings are these ORNL staff members.

David W. Cardwell, Reactor Division, presented "Application of Multipurpose Telecommunications Systems to Atomic Energy Research and Development Facilities" at the International Symposium of Online Interactive Computing in London, England, September 4-7.

Lawrence Dresner, Chemistry Division, presented "Description of Hyperfiltration of Multicomponent Solutions Through Ion-Exchange Membranes Using the Extended Nernst-Planck Equations at the Max-Planck-Institut in Frankfurt, West Germany on September 18. He also presented "Attenuation of Shock Waves in Long Pipes by Orifice Plates, Rough Walls, and Cylindrical Obstacles" at the Third International Symposium on Military Applications of Blast Simulators in Schwetzingen, West Germany, September 19-21. Co-author of the paper is Conrad V. Chester. At the meeting Dresner also presented a paper for Conrad Chester and Rowena O. Chester, "Interaction of the Structure of a Selected Reactor Containment with Near Kilobar Nuclear Weapon Shockwaves in Air."

Howard L. Adler, director of the Biology Division, chaired the Radiation Effects on Phage and Bacterial Cells Session at the Ninth Annual Meeting of the European Society for Radiation Biology in Rome, Italy, September 26-28.

Enzo Ricci, Analytical Chemistry Division, will present "Analysis of Traces of ORNL's High Flux Neutron Activation Laboratory" at the French C.N.R.S. International Colloquium at Saclay, France, October 2-6. He will also lecture on "New ORNL Activation Analysis Facilities" at the Institute for Radiation Research, Munich, Germany and the Junta de Energia Nuclear at Madrid, Spain.

Robert W. Roussin, Neutron Physics Division, will present "Data Activities of the Radiation Shielding Information" at the Fourth International Conference on Reactor Shielding in Paris, France, October 9-13.

There is something heartening in the example set by a man who, nearing the age of 80, planted a rose garden.

Engineer Technician week proclaimed October 8-14

Last week in Nashville, Tennessee Governor Winfield Dunn proclaimed the week of October 8-14 as Engineering Technician Week in Tennessee. He also commended the Oak Ridge-Knoxville Chapter of the American Society of Certified Engineering Technicians for its level of professional standards and contributions as members of the engineering-scientific team.

The special emphasis on Engineering Technician Week this year will be calling attention to the fact that engineering technicians who wish to be certified by the examining board after December 31, 1972, will be required to pass a comprehensive examination. Prior to this time, qualified technicians could be certified on the basis of their work record and occupation experience.

UNITED FUND CARDS ALL OUT

United Fund cards are in the hands of all employees by now. It is urged that they be given back to the solicitors as soon as possible. Complete reports will be made almost immediately after all cards are in.



COLLEGE GIFT — A Union Carbide Corporate gift of \$3,500 was recently awarded to the University of Missouri-Rolla for the chemical engineering department. Accepting the unrestricted gift is Merl Baker, center, chancellor of the University. Clyde C. Hopkins, superintendent of the Paducah Gaseous Diffusion Plant, makes the presentation, as Oak Ridge Gaseous Diffusion Plant Superintendent Robert A. Winkel looks on from the right.

Paducah lists two promotions; Y-12 names Henegar foreman

Three promotions are announced recently in the Nuclear Division. Carl C. McDowell has been named a shift superintendent coordinator and C. Marion Daniels a shift superintendent, both at the Paducah Gaseous Diffusion Plant. Allen W. Henegar has been promoted to a production dispatching foreman in the Y-12 Plant.

C. Marion Daniels came with Union Carbide in March, 1952, at the Paducah Plant. He has been a foreman in the Cascade Department and in 1970 was named a cascade coordinator.

Daniels and his wife, Betty, live on Lutes Road in the Lone Oak area of Paducah. They have two married daughters also living in that area, and a son in the U.S. Navy.

Carl C. McDowell

Carl C. McDowell began his career with Union Carbide in 1933 at South Charleston, W. Va. In 1944 he transferred to ORGDP, Oak Ridge, and came to the Paducah Plant in early 1951.

McDowell and his wife, Kitty, live at South 40th Street, Paducah. They have two sons, one in the Army in Germany and one a student at the University of Kentucky.

Allen W. Henegar

Allen W. Henegar came with Union Carbide in 1970 after graduating from The University of Tennessee. He holds a B.S. degree in journalism and also is a graduate of the Famous Artist School's commercial art section.

Henegar and his wife, Wanda, live at 114 Wade Lane, Oak Ridge. Mrs. Henegar is employed in the traffic department of Television Station WATE-TV, Knoxville.



Daniels



McDowell

Ecologist Thomas passes State's bar examination

William A. "Tom" Thomas, head of the environmental indices section of the National Science Foundation's Environmental Program at ORNL, has passed the Tennessee Bar Examination. The results

of the July examination were announced last week.



Thomas

Thomas came to ORNL in 1967. He holds the Ph.D. in ecology from the University of Minnesota. He is chairman of the state board of reclamation review which recommends

policy and handles complaints on strip mining. He has also been active in the development of the Oak Ridge Air Quality Index.

Thomas completed his Doctor of Jurisprudence at The University of Tennessee College of Law in June. He is teaching environmental law on a part time basis this fall at UT.

Breeder reactor talk set at nuclear safety seminar

Godwin Williams Jr., assistant manager of power with the Tennessee Valley Authority, will speak at the Nuclear Safety Seminar October 19. The seminar is set for 9:15 a.m. in the east auditorium of ORNL's 4500 building.

Williams has participated in the activities of Southeastern and National Electric Reliability Councils and North American Power Systems Interconnection Committee and is presently secretary-treasurer of the Southeastern Electric Reliability Council. He belongs to the Tennessee and National Societies of Professional Engineers, is a senior member of the IEEE, and is a registered professional engineer in Tennessee.

He will speak on the new breeder reactor demonstration plant to be located on the Clinch River near Oak Ridge. His subject is "Breeder Reactor/Power for the Future."

ORNL paper for ASNT

ORNL Metals and Ceramics Division's C. V. Dodd will be presenting "Eddy Current Evaluation of Nuclear Control Rods" at the 32nd National Fall Conference of the American Society for Nondestructive Testing to be held October 16-19 in Cleveland, Ohio. The paper was co-authored by J.H. Smith and William A. Simpson also of the Division.

"We should render a service to a friend to bind him closer to us, and to an enemy to make a friend of him."

... Cleobulus

Animal studies in cancer research being reported in national meet

Scientists from the National Cancer Institute, Berton Zbar, head of the Cellular Immunity Section; Herbert J. Rapp, chief of the Health, Education and Welfare Institute's Biology Branch; together with Michael G. Hanna Jr., head of Immunology of Carcinogenesis Group in ORNL's Biology Division, have reported their results with stimulating the immune, or disease fighting, systems of animals with cancer in a recent issue of the *Journal of the National Cancer Institute*.

Experimentation by these researchers has been done only with animals. No human experimentation will be done at ORNL. Hundreds of people have contacted ORNL within the last week to ask whether this type of treatment was available. They have been told to seek the advice of their own physicians.

Their studies in animals with cancer suggest that when white blood cells are continually activated by BCG, a stimulant of the body's immune defense system, they summon the body's scavenger cells which, in turn, cause rapid destruction of the cancer.

Animal experiments

In these experiments, the investigators treated guinea pigs that had developed cancer with bacillus Calmette-Guerin (BCG), a strain of the organism that causes tuberculosis in cattle (*Mycobacterium Bovis*). Guinea pigs were selected for the study because of similarities between their immune systems and that of man's. Both, for example, are highly sensitive to BCG.

BCG was used to stimulate the animals' immune system which prior to exposure to BCG was not functioning effectively enough to destroy the cancer cells. However, when live BCG was injected directly into the cancers, a local inflammatory reaction was observed within 24 hours, with swelling and redness of the skin around the injection site. This was followed by the development of a delayed hypersensitivity reaction which is indicative of an immune response. The size of the cancers gradually decreased with complete disappearance at the original sites of implantation, and elimination of distant cancer cells within 25 days. Other animals with cancers of the same type, treated either by surgical removal of the cancer or by injections of nonreactive salt solution into the cancers, did not experience tumor regression.

Microscopic study of tissue samples from tumors and lymph nodes of animals with cancer indicated the presence of abnormally large numbers of lymphocytes, white blood cells in the body that recognize foreign material, and the scavenger cells, or histiocytes. It is believed that lymphocytes are activated by the BCG, which they recognize as foreign material, and call forth the histiocytes that act as killer cells to the tumor.

Another study cited

Study of tissue samples from the tumors and lymph nodes revealed that as early as four days after BCG treatment, small clusters of histiocytes, known as granulomas, had developed at the injection site and within the neighboring lymph nodes. Seen near these granulomas were many cancer cells showing signs of degeneration, indicating that, in these experiments, the histiocytes were the

major cell type responsible for cancer cell death.

Results of another study reported by Hanna, Zbar, and Rapp indicated that it is the chronic nature of the delayed hypersensitivity reaction caused by BCG which leads to cancer cell destruction. Experiments using several chemicals, such as turpentine, which are known to produce brief, local inflammatory reactions, revealed that the short-lived reactions produced by these agents did not suppress tumor growth. It has been suggested, therefore, that it was not the inflammation itself, but rather its duration, that was a determining factor in the inhibition of cancer cell growth.

Conference set

Earlier experiments in this field have been reported by Rapp and Zbar, in collaboration with Edgar E. Ribi, of the National Institute of Allergy and Infectious Diseases, Rocky Mountain Laboratory, Hamilton, Mont. They suggest that the cell wall, or outer coat of the BCG may be responsible for the chronic nature of the delayed hypersensitivity it induces, and for the subsequent tumor destruction observed in these experiments. According to Rapp, the investigators now plan to attempt to isolate the chemical substances from the BCG cell wall which are responsible for the anti-cancer activity of the BCG.

These and subsequent results are being presented at an international conference on the use of BCG in the therapy of cancer being held at NIH, today and Friday. Rapp is a keynote speaker at the conference, which is jointly sponsored by the Division of Cancer Cause and Prevention and the Division of Cancer Treatment of the National Cancer Institute.

SHARE-THE-CAR Y-12

RIDER from Athens, via Sweetwater, Loudon and Lenoir City, to any Y-12 Portal, straight day. A.R. Shamblin, plant phone 3-7181, home phone Athens 745-2838.



EAGLE SCOUT -- David Hackney, with 26 merit badges, recently became an Eagle Scout in ceremonies in Paducah. David is a junior at Tilghman High School. Mrs. Hackney, his mother, admires the eagle badge above. The young scout is the son of John Hackney, in Maintenance at the Paducah Plant.

Y-12ers' papers slated at UT, in Chicago meet



Scott

West



Gray

Three Y-12ers have authored papers to be presented in October.

Process analyst John R. Gray will discuss "Shop Scheduling" at the Southeastern Regional Meeting of the Institute of Management Science. The meeting is set at The University of Tennessee, October 12-13.

Health physicists L. Max Scott and C.M. "Hap" West have written a study of ²¹⁰Po oxide which Scott will present in Chicago, October 10-11, at the Bioassay Conference.

Getting involved

Oak Ridge employees wishing to get involved may do so now without effort. The Anderson County Voluntary Action Center is now open. The organization, based at the Jaycee Clubhouse, Melton Lake Drive, will help volunteers find rewarding assignments with Anderson County agencies who need volunteers to carry out their work. VAC is open between 9 and 11 a.m., Monday through Thursday and 12:30 to 4:30 p.m. on Wednesday. They may be reached by mail by writing ACVAC, P.O. Box 3372, Oak Ridge.

COMPANY SERVICE —20-25-30—

Y-12 PLANT 25 YEARS

Harold V. Craft, William E. Barker, William G. Delones, Roy F. Farmer, Lester L. Kilgore, William P. Mattingly, Charles A. Trotman and Homer D. Baker.

20 YEARS

Glepmore G. Wilson, Tom R. Clotfelter, George H. Heins, Ralph E. Reynolds, Richard H. Holbrook, William G. Butturini, James E. Lovelace, Earl L. Walker, Glen A. Lundquist, Charles C. Dinkins and Bobbie L. Mowell.

ORGDP 25 YEARS

Harold F. Cornett, Elvin T. Henson Jr., Albert N. Jackson, Robert C. Scruggs and Robbie M. Wyatt.

20 YEARS

Charles P. Hammett, Stanley J. Finch, James R. Mains, Forrest Dudenbostel, W. Eugene Rooks, Robert L. Phillips, Robert D. Boone, Noah D. Byrd, Hollis P. Rainwater, Ralph W. Greaser, Herman L. Walker, David W. Thomas, Michael S. Haurilak, Johnny R. Johnson, Whetsel Branham and Samuel B. Hopwood.

PADUCAH 20 YEARS

Hubert H. Clayton, Wilfred H. Brandon, Robert L. Echols, Marvin A. High, Bill Dunn, Robert H. Spiceland, Lanis C. Cunningham, Kenneth A. Ross, Hardy J. Pottinger, James R. Story, Gilbert Perdue, Dave A. Green, Barney M. Ross, Willie R. Walker, Henry H. Roberts, Harold F. Connor, Dorothy J. Utley, Clyde C. Dupree, Hubert L. Conway Jr., Clarence F. Robertson, Brice C. Edwards, David R. Lockhart, Carson E. Pafford, Paul W. Gipson, Charles A. McDaniel, Alton B. Ridings, Henry G. Oliver, Robert L. Scott, Dwight L. Watson, Vester L. Faircloth, Raymond H. Hunt, Charles L. Ashburn, Charles A. Collier, Hugh E. Johnson and Charles A. Hess.

ORNL 25 YEARS

Jesse M. Luckett, Gerald N. Case, Betty W. McCown, George G. Kelley, Edward L. Maples, Ben Gibson, Paul G. Parker, Arnold R. Olsen, Guy Jones Jr., Woodford Terry and Stewart E. Dismuke.

"What is the hardest task in the world? To think."

... Ralph Waldo Emerson

ASNT-ACS joint meeting set, breeder reactor talk

The Oak Ridge section of the American Society for Nondestructive Testing and the Analytical Group of the East Tennessee section of the American Chemical Society will sponsor a joint meeting next week.

David F. Cope, division of Reactor Development and Technology, of the Atomic Energy Commission, will speak on the "Role of the Demonstration Plant in the Liquid Metal Fast Breeder Reactor Program." The joint ASNT-ACS meeting is set for October 10, at 8 p.m. in the auditorium of the Oak Ridge Civic Center.

Two Paducah employees elected officers in newly formed secretaries' association

The Mayfield Chapter of the National Secretaries Association, International, was installed recently at the Holiday Inn, Paducah. The Paducah-Kentucky Lake Chapter, sponsors for the new chapter, was in charge of the program and installation ceremonies.



Mrs. Warren

Mrs. Wolfe

Frances Haynes, CPS, was mistress of ceremonies. The Rev. John C. Huffman, minister of the First Baptist Church, gave the invocation. Charles O. Davis, city

judge; Larry Winders, executive vice president of the Mayfield-Graves County Chamber of Commerce; and Carroll Hubbard Jr., state senator, represented the city of Paducah.

Frances B. Jakes, Southeast District director and Lucille Parr, CPS, president of the Kentucky Division of the NSA, performed the charter and officer installations.

Two of the 24 charter members, representing diversified business and industry in the area, are employed at Union Carbide. They are Genevieve Warren, president of the new chapter and Alenda Wolfe, recording secretary. Mrs. Warren is in Paducah's Fabrication and Maintenance Division and Mrs. Wolfe is in the Finance and Materials Division.

Other Paducah employees participating in the program included Ardyce Ballard, Betty Green, Musie Naive, Mary Ellen Pfost and Chester McWhorter.



RECEIVE CERTIFICATES — The Oak Ridge Chapter of the National Secretaries Association recently awarded certificates to its newest Certified Professional Secretaries. Receiving their certificates, from left, are Mrs. Patricia Worsham, Mrs. Janice Winslett, Mrs. Dessie B. Stewart, Mrs. Lindy Norris, and Mrs. Helen Truett. Presenting the certificates is Mrs. Elizabeth P. Craft, CPS, president of the Tennessee Division of NSA. Former Y-12er Veronica (Ronnie) Stenglein was not present for the awards. Mrs. Norris, Mrs. Stewart and Mrs. Truett were added to Union Carbide's growing list of CPS's.

'Where are you going?' theme for successful secretary seminar

More than 300 persons attended the National Secretaries Association's seminar held in Oak Ridge recently. "Where in the World are You Going?" was the title of the Oak Ridge chapter's program.

The DAE seminar featured Doris A. Engelhart, CPS, and Vicki Young in a three-part program dealing with such subjects as: "Understanding yourself and others," "Problem solving," "Creative thinking," "Fear and how to overcome it," "Improving your image," "Getting

the message," "Getting your message across," and "Charting your own course." A film, "Pack your own chute," completed the seminar.

The function began with a luncheon presided over by Rebecca Rickman, CPS, president of the Oak Ridge chapter of NSA. Elizabeth Harris was luncheon chairman. Elizabeth P. Craft, CPS, president of the Tennessee Division of NSA, gave out six certificates to newly Certified Professional Secretaries. Lindy F. Norris and Dessie B. Stewart, ORNL; and Helen Truett, ORGDP, were the Union Carbide employees to receive certificates. Veronica M. Arminton (Ronnie Stenglein) a former Y-12er, also received her certificate in absentia; and Janice Winslett and Patricia Worsham were present for their presentations.

Mary Cusman, CPS, acted as seminar coordinator.

You gotta be kidding!

A meeting on "Realism" is being held on April 1-5, 1973, at the Disneyland Hotel. The stated purpose of the meeting is 'to provide a forum for interchange between educational, industrial and government activities to impact the nation's environmental programs with REALISM in relationship to goals, testing, measurements and controls of the environment.' If you dare, there is a call for papers. Remember, the meeting subject is "Realism" at the Disneyland Hotel beginning on April 1.



Y-12 PLANT

RIDE from East Knoxville area, to West Portal, straight day. Jean Norris, plant phone 3-5359.

RIDER from North Knoxville section to East, North or Central Portal, straight day. J.F. Baker, plant phone 3-5935, home phone Knoxville 637-1769.

ORGDP

JOIN car pool from Chapman Highway section, Knoxville, to ORGDP Ad Building, 7:45 to 4:15 shift. Susan Lowe, plant phone 3-4367, home phone Knoxville 573-2068.

ORNL

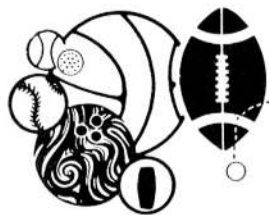
TWO CAR POOL MEMBERS from vicinity of Waddell, West Outer or Pennsylvania to East or North Portal, 8:15 a.m. Tom Burnett, plant phone 3-6939 or Oak Ridge 483-1975 or Dick Reed, plant phone 3-1801 or Oak Ridge 483-3458.



ON THE WAY — ORNL's Vernon E. Stokes sees O.H. Park, center, and A.T. Connelly post late figures on the United Fund front. There are signs at all three of the Oak Ridge plants.



CO-CHAIRMAN ENTHUSIASM — B.W. Hensley, one of Y-12's co-chairmen in the United Fund Drive gives a pep talk to various union leaders in Y-12 prior to the UF kick-off recently. Hensley, president of the Atomic Trades and Labor Council, has been an active UF leader in the plant for several years.



SPORTS NOTES

79622



LITTLE BOY-BIG POND — The peaceful shores of the Clark Center Recreation Park offer much to the outdoor sportsman. Above, an employee's child (unidentified) feeds the friendly ducks on the waters of Melton Hill Lake. The park has many attractions despite the season's end.

Although the Clark Center Recreation Park is "closed" for the winter season, there are several advantages for Carbide employees still available. Boat launching, picnicking, etc., still is the thing. For more than 10 persons per picnic, better make reservations. Camping permits are still available through Recreation, extension 3-5833. You need a key for camping, since the gate is closed. The outside gate is open from 5 a.m. until 11 p.m.

ALL CARBIDE SKEET

Charlie Asmanes, Y-12, copped honors in the September Skeet firings, earning a 48,528 handicap total. G. Kwiczen, ORNL, held down second place with a 48,240 and Alan Van Hull, Y-12, pulled in third place with 47,978. Vern Raen, Joe Comolander and Bob Allstun fired under penalties from previous winnings.

Y-12 GOLF

W.H. Tipton and J.D. Watkins defeated Neil and Jerry Case in the title match



GOLF CHAMP — Phyllis Smith, Computer Technology Center at ORGDP, took honors at South Hills Golf Club recently in the first flight competition. Runner-up for the tournament was Polly Ryder (wife of S.C. Ryder, recent retiree from ORGDP Stores Department). Phyllis' spouse is also an ORGDP employee, Poe Smith, of the Machine Shop.

for South Hills Golfers. Tipton-Watkins won the league's first half, the Cases the second. Cloyd-Townsend tied with Manley-Gipson for the league's second place.

Butler-Patton placed first in match play at Southwest Point, ahead of Goddard-Hatmaker and Stanton-Mundt.

PADUCAH GOLF

A Golf Scrabble is planned for Saturday, October 14, at the Village Greens, Kentucky Dam State Park, for Paducah golfers and their spouses. Deadline for entering the competition is October 11.

Golfers interested in the affair should telephone the golf committee or Recreation, Bell 368, PAX 335.

ORNL BOWLING

A League standings find the Late Comers barely ahead of the Ten Pins, with the Punops hanging onto a third place lead. The Half Frames P.R. Kuehn posted a 247 game with handicap on a recent contest.

A deadlock has developed for the top of the E League through September 19. The Woodchoppers, Dodads and Limits share top spot. The Gutterfinks' Casciano rolled a 654 handicap series for honors recently.

ORNL Ladies League has the Pick-Ups out front by one, ahead of the Striketees and Spinners.

The Oops and Lucky Strikers share honors in the Carbide Family Mixed League. Edith Duckworth, Oops; and Del Ducay shared women's and men's honors recently.

C League finds the Damagers out ahead of the pack, with the Pin Heads and Beryls close in. H.H. Abec rolled a 238 handicap single for highs on September 20.

Y-12 BOWLING

The Anodes stand atop standings in the C Monday night League with only a half-point loss through September 18. The Big Five hang nearby, while the Rounders and Sunflowers hover in the wings, ready to take over if anyone falters.

The Swingsters boast a perfect record through September 14 in the big Classic League, as the 16-team goes at it. Del Ducay rolled a 242 recently. The Bumpers have already put a 3076 handicap series on the record book!

In the Mixed League, the Hits & Misses eke out a one-half point lead ahead of the Rollers, through September 27. Bill Hackett recently rolled an all-spare game... with nine nine's on the first ball... and two eights!

ORGDP BOWLING

The Amps claim top slot in the Wednesday 5:45 League for K-25ers, with the Planners and Rookies hot behind. Ernie Blankenship posted a 245 single recently; while Jim Conner rolled a 650 series! Rush Flanagan put a 267 game down the week before; and Marv Gilreath rolled a 651 series.

The Up-Towners hold center stage in the ORGDP Women's Bowling League, as the Hotshots and Pay-Offs hang in there. Mary Hawkins rolled a 528 scratch, 651 series recently.

The City Slickers hold the lead down in the Tuesday League for K-25ers. Double X and Possibles, along with the Braves hang in on the remaining standings.

ALL CARBIDE LADIES!

Women wishing to organize volleyball and basketball teams for winter play should be in touch with Recreation, extension 3-5833. If enough interest is shown, both leagues will be organized. Men volley and basketballers will be called to arms at a later date for play in late November.



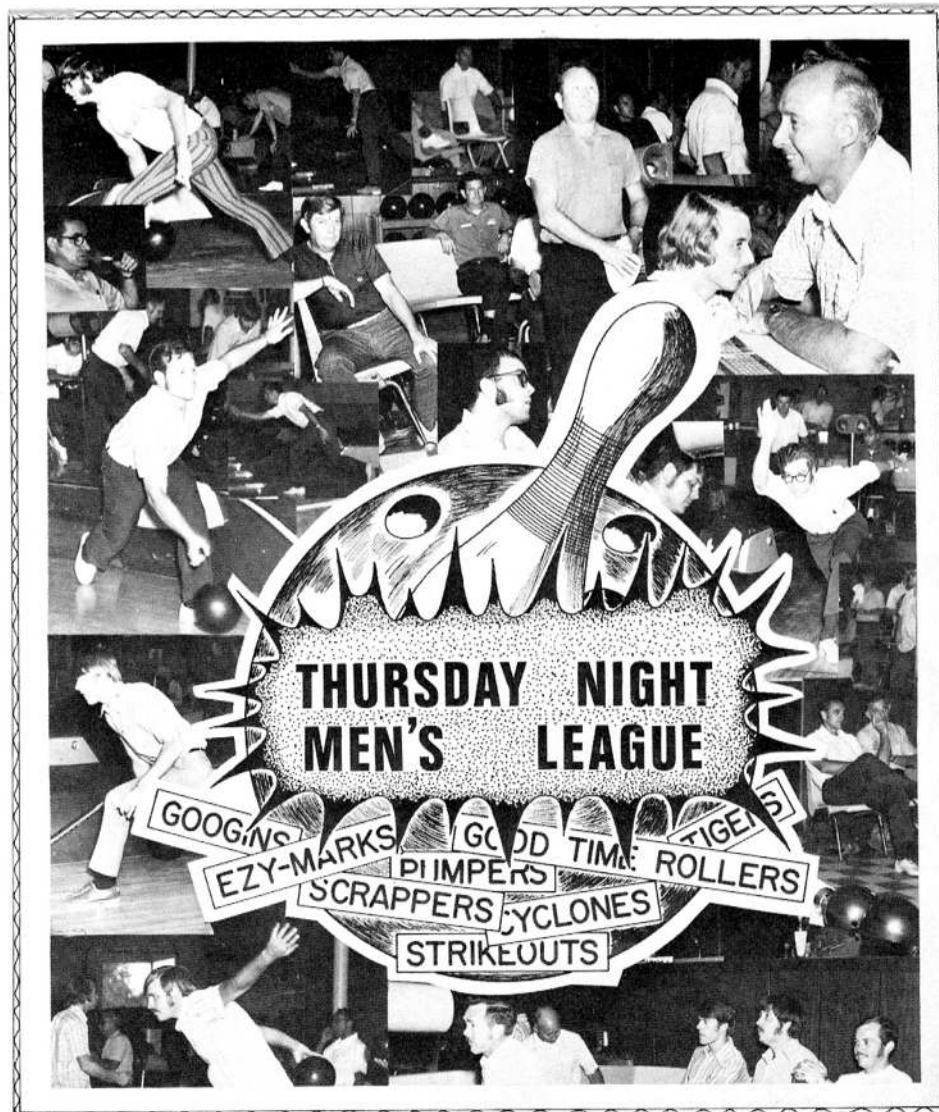
EARNs SCOUT AWARD — Dan Thomas has earned the rank of Eagle Scout in Boy Scout Troop 134, Norris. He will enter Tennessee Wesleyan College this Fall. At Norris he was a member of the Beta Club, the National Honor Society, and was first chair percussionist with the band. His father is Joseph T. Thomas, Y-12's Technical Division. Scoutmaster was Joe Fee-man, Y-12's Assembly Division.

ALL CARBIDE GOLF

Carbide golfers wishing to participate in the third annual Open City golf tournament, set in Oak Ridge, take note. The dates are October 14 and 15, and to be qualified you either have to live or work in Oak Ridge. You may enter by writing the Jaycees, P.O. Box 448, Oak Ridge. Give them your name, address and telephone number.

PADUCAH BASKETBALL

Men wishing to participate on Carbide's team or teams in the Paducah Industrial League should get in touch with Mike Flood as soon as possible. PAX 657. Play should be underway toward the latter part of this month.



GOOD FORM — Some of the excellent bowling form seen in Paducah alleys are in evidence the first night of bowling. The eight-team league welcomes the Good Time Rollers, featuring several new bowlers.

Olympic records---end in sight?

By T. A. Lincoln, M.D.

Many people who watched the Olympics on TV must have wondered how much longer records will be broken. What is the ultimate limit in human performance? Are we near it now?

Looking over the Olympic records since 1896, one is impressed by the amazing reduction in times in swimming and track events and the increase in strength in the weight lifting and field events.



Although Mark Spitz's new swimming records and seven gold medals captured the media spotlight, a little-noticed women's record deserved much more attention. Ludmila Bragina of the Soviet Union ran the 1500 meters in 4

min., 1.4 sec. The world record going into the games was 4:09.6 and was lowered to 4:05.1 in the preliminaries. Six women beat that record! Seventh place went to 4:06.5, also better than the world record prior to the preliminaries.

Albert Hill won the 1500 meters in 1920 at 4:01.8. The girls now make these men's records look slow. However, the men have improved just as impressively. In the 1968 Olympics, Kip Keino from Kenya ran the 1500 in 3:34.9, while Edwin Flack from Australia required 4:33.2 in 1896, almost a full minute longer.

Marathon record

The improvement in the marathon (26 miles, 385 yards) is even more remarkable. In 1896, Louys Spiridon from Greece struggled over the finish line at 2 hrs., 58:05, while in Munich, Frank Shorter finished in a little over 2 hrs., 12 minutes, and that was not a record. The fastest time is owned by Derek Clayton, 2 hrs. 08:33. It is hard to realize that marathon runners are now running 26 miles at about 4:50 per mile which is almost as fast as one mile was run in 1896.

For a long time, mathematicians have been analyzing races, trying to explain why runners seem to have to run slower for long distances and predicting records. Milton Lietzke, ORNL's Chemistry Division, published three papers in *Scientific American and Science* in the early 1950's on this subject. He noted that there was a log-log relationship between distance and time in various types of races. More recently, two men from Canada have proposed a new mathematical formula in which they use a fatigue coefficient which is specific and remarkably constant for each athlete. By using the lowest value seen so far (.5 by Ron Hill of Great Britain), they project ultimate running performances of 1:27 for the half mile (current record 1:44.9), 3 minutes for the mile (current record 3:51.1) and 1 hour 37:30 for the marathon!

Stored energy

The mathematicians can have their fun, but it will obviously be the athletes and exercise physiologists who will determine the ultimate limits of performance. The physiological changes which occur in

highly trained distance runners are quite remarkable. Their oxygen uptake from the blood is nearly 50 percent larger than normally active men. They are able to use up to 86 percent of this capacity steadily for over two hours. Large oxygen capacity, which is partly a genetic gift, and the ability to utilize it maximally in muscles, characterize the record breaker.

The efficiency of marathoners' chemistry is amazing. In spite of running almost at their maximums, they accumulate almost no excess lactic acid in their muscle of blood. When muscle energy stores are burned without adequate oxygen, lactic acid is formed. Sprinters quickly outrun their oxygen supply and survive by being able to tolerate the lactic acid buildup in their muscles until they flash across the finish line.

No fatigue evidence

Marathoners have higher blood sugars at the end of a race than at the beginning. They don't run out of circulating energy stores. They are 5 to 10 percent more efficient in terms of net oxygen consumed per meter and per kilogram of body weight than middle distance runners. The cardiac output goes as high as 34.5 liters per minute (about 180 cc/beat), compared to 23 liters/min for normally active men and this increased output can be maintained for several hours. The body temperature at the end of 26 miles is consistently over 104° F. They may lose 10 to 13 pounds of weight due to sweating. In spite of this stress, Frank Shorter did not appear exhausted as he smilingly ran an extra lap around the stadium to acknowledge the cheers.

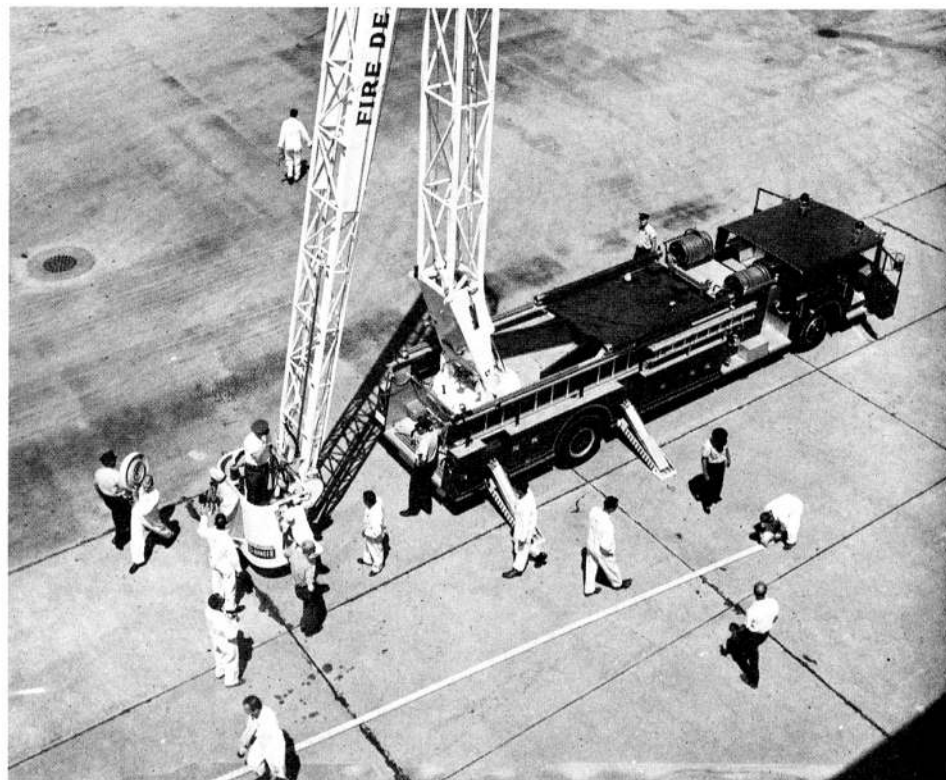
The above training effects have only begun to be utilized in other sports. Future record breakers will begin disciplined training at an early age and will work many hours every day (seven days a week).

Better specimens coming

One must remember that modern athletes are much better endowed physically than their predecessors. They have become, on the average, 6 percent taller and 13 percent stronger since the 1920's and this process will accelerate when athletes marry athletes. Because of the great amount of time and discipline required, athletes will naturally look for mates who are sympathetic with their goals. Such selection will increase as athletes are chosen at an earlier age and kept separated from other young people because of their training and competition schedules. Consciously or unconsciously, we will be breeding better athletes.

With better nutrition and control of infectious diseases, better physical specimens will develop. With greater recognition and support of athletic achievement, talent will be identified earlier and the truly exceptional candidate will be exposed to the best coaching available. Facilities will greatly improve. The changes brought about by new equipment, for example the fiberglass pole, synthetic track surfaces, and special starting blocks, will help athletes break records.

Although the spring distances may be approaching their maximums, that excep-



FIRE PREVENTION — Fire Prevention Week, October 16-21, is again official. Paducah employees have completed another year of activity without incurring a reportable fire loss at the Kentucky installation.

Fire prevention week

In addition to inspections and refresher courses, two films will be shown. The films are "Fire -- Two Ways Out" and "Help Prevent Fires." Scheduled showings are October 9 and 10 in the auditorium of 2518 at 9 and 10 a.m. and 1 and 3 p.m.; October 11, 12 and 13 at 9 a.m. and 1 p.m. Showings are also scheduled for Central Auditorium in 4500 N on October 11, 12 and 13 for 10:30 a.m. and 3 p.m.

October 9-13 is Fire Prevention Week. The remarkable record we have at ORNL is due, in a large sense, to the everyday

work done by each employee. Hundreds of potentially dangerous situations are called into the Fire Department; consequently, most of these situations can be handled with little or no property damage. Had these conditions not been recognized by these people, they could have caused thousands of dollars damage.

For activities at Y-12 and ORGDP concerning Fire Prevention Week, check official bulletin boards. Be alert to fire-potential situations and help maintain good prevention records. That's a benefit to each employee!

Nuclear Division deaths



Mr. O'Neil



Mr. O'Barr

David C. Stahr, Paducah Plant medical technician, died at his Mayfield, Ky., home September 12 after an extended illness.



Mr. Stahr

Mr. Stahr had worked at the Paducah Plant since 1953. He is survived by his wife, Virginia; six sons, Bill, Greg, Ben, Mark, Andy, Jeff; two daughters, Ruth Anna and Amy; and his mother and three sisters.

Funeral services were held at St. Joseph Catholic Church with burial in the church cemetery in Mayfield.

tional combination of talent, physical endowment, and motivation can still expect to break records for many years to come.

Joseph V. O'Neil, Y-12's Fabrication Division, died September 21 in a Knoxville hospital.

A native of Knoxville, Mr. O'Neil served in the U.S. Navy during World War II. He came to Y-12 more than 17 years ago.

The O'Neil home is at 5008 Monte Vesta Drive, Knoxville. Survivors include two daughters, Mrs. Brenda Roberts and Mrs. Linda Wyatt; five sons, Joseph V., Jr., Michael A., Ronald, Timothy D., and Pfc. Terry L. O'Neil; his mother; two sisters; three brothers; and four grandchildren.

Funeral services were held at McCarty's Mortuary with the Rev. A.J. Crawford officiating. Interment was in the Woodlawn Cemetery.

James A. O'Barr, a process operator in Y-12's Casting Department, died September 22 in a Knoxville hospital from a massive heart attack.

A native of Leeds, Ala., Mr. O'Barr was a veteran of the U.S. Navy.

Survivors include his wife Mrs. Louise Bright O'Barr; Route 1, Corryton; daughters, Mrs. H.D. Robertson, Mrs. Billy E. Graves and Mrs. Edward Wilson; sons, James L. and Alfred W. O'Barr; two sisters; three brothers; and four grandchildren.

Funeral services were held at the Mynatt Chapel in Knoxville, with the Rev. Robert Irwin officiating. Burial was in Greenwood Cemetery.

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CALENDAR of EVENTS

TECHNICAL

October 6

Solid State Division Seminar: "Intensity Correlation Spectroscopy: Its Application to Critical Phenomena in Fluids and Biological Systems," S.H. Chen, Massachusetts Institute of Technology. Conference Room, Building 3025, 10 a.m.

October 9-11

Metals and Ceramics Division Information Meeting: Oak Ridge National Laboratory.

October 10

Biology Division Seminar: "Macrophages in Tumor Immunity," Peter Alexander, Chester Beatty Research Institute, London. Room 422 Hesler, University of Tennessee, 12 noon.

October 16-18

Health Physics Division Information Meeting: Oak Ridge National Laboratory.

October 23-25

Biology Division Information Meeting: Oak Ridge National Laboratory.

October 24-26

Analytical Chemistry Conference in Nuclear Technology: Riverside Motor Lodge, Gatlinburg. All sessions begin at 8:30 a.m.

COMMUNITY

October 6-7

Handicrafts Fair: Women's Alliance of the Unitarian Church: October 6 from 10 a.m. to 9 p.m.; October 7 from 10 a.m. to 6 p.m. Unitarian Church, corner of Robertsville Road and Turnpike.

October 10

Carbide Camera Club Monthly Meeting: PSA recorded lecture on color printing. Cheyenne Hall, 7:30 p.m.

October 13-14-15

Studio Theater of the Oak Ridge Playhouse presents "Of Mice and Men" by John Steinbeck. Admission: Free to Playhouse members; adults \$1.25; students \$0.75.

October 24

Carbide Camera Club Special Meeting: Speaker Emory Krisof, staff photographer for National Geographic on assignment in the Tennessee valley. Social room of the Civic Center, 7:30 p.m.

DIVISION Retirees



Wilson

Garner Wilson, ORGDP Janitors Department, came with Union Carbide November 29, 1945. He retires to his Route 4, Loudon home, after more than 26 years at ORGDP.

Playhouse try-outs

Try-outs for the drama "Slow Dance on the Killing Ground" will be held October 16 at 8 p.m. at the Oak Ridge Playhouse. Needed will be one 18-year-old female, one young black male and one adult white male. No previous theatrical experience is required, and all are encouraged to read for parts.

A Woman's Word

'A Dubious Distinction'

Women, want premature wrinkles, serious dental problems, more illness? Well, to quote a familiar commercial, "You've come a long way, baby."

Women now have the dubious distinction of catching up with men in the effects of smoking on them. Evidence, building up in recent years, shows women are in the same boat. Death rates for women who smoke compared to those of non-smoking women are following patterns similar to those for men who smoke vs. those who do not. For instance, the chance of developing lung cancer is more than twice as high for women smokers as for non-smoking women. Middle-aged women (45-54) have twice the risk of dying of coronary heart disease if they smoke.

Health hazards

The story doesn't end there. Women who smoke have more illness, lose more time from work, are sick in bed more often than women who do not smoke. Add dental problems and the possibility of premature wrinkling and you have a picture that is not pretty.

These health hazards are shared by men and women smokers alike. But there is one which is exclusively women's -- the effect of smoking on pregnancy. Studies of expectant mothers both here and abroad have found that women who smoke during pregnancy have a greater chance of having a low birth weight baby. They also have an increased risk of an unsuccessful pregnancy because of miscarriage or infant death. This is putting a rather high price on a habit.

Although there has been a feminine touch to cigarette advertising since the business began, the new emphasis of a cigarette just for women, with advertising that plays on our desire for equality and recognition, is a cause for considerable concern on the health front -- not just for the 20 million women who are currently smoking, but for the growing number of teenage girls who are taking up the smoking habit.

Health experts are also concerned that women are not as successful as men in giving up smoking. According to a recent government health survey, 26 percent of adult men have quit, but only 11 percent of women have dropped the habit. Part of the problem is not so much quitting as being able to stay off cigarettes. Between

1966 and 1970, one man in 12 who had quit went back to smoking; the ratio among women is one in nine. Lack of acceptance of the health threat is one reason why some women are unable to stop. Certainly another important factor is the fear of gaining weight, which does happen in some cases, but by no means in all. At times women find they need cigarettes to help relieve tensions, reduce anger or cope with household routine.

"Some women just can't give up smoking," says Elvin Adams, medical director of the National Clearinghouse for Smoking and Health, Center for Disease Control, Health Services and Mental Health Administration of the U.S. Department of Health, Education and Welfare. "But it is encouraging that the number of those who can is growing. There are almost twice as many former smokers among women today as there were in 1964."

"One fact is indisputable. Quitting pays off. In terms of her health, the woman who gives up smoking will probably find that she feels better. She will have fewer respiratory symptoms; her cough will disappear. In the long run, her risk of severe illness or premature death will be about the same as that of non-smokers. Of course, the good things about quitting are not limited to health, not to the individual woman. Her family, her home, her job stand to benefit as well."

M.G.

QUESTION BOX

(Continued from page 1)

higher salary. However, it appears there may be more background information that has a bearing on the situation. The most important consideration in salary determination, of course, is the end result -- the quantity and quality of the work performed.

Incidentally, this column is intended primarily to answer questions of general interest. It cannot resolve individual problems, particularly where there is anonymity and where all the facts are not known.

QUESTION: I will soon be with Union Carbide Corporation 15 years. I understand after that you have "vested rights"; what are they?

ANSWER: "Vested rights" is a phrase used to describe the provision for benefit payments from the Pension Plan and/or the Contributory Retirement Plan, if employment with the Company is terminated under certain circumstances prior to retirement.

An employee has a "vested right" to a PENSION PLAN benefit payable at age 65 provided he is at least 40 years of age and has at least 10 years of Company service credit when terminated. He may receive a reduced benefit as early as age 62.

If an employee is enrolled in the CONTRIBUTORY RETIREMENT PLAN at the time of termination and has at least 15 years of Company service credit, he has a "vested right" to benefits at age 65. A reduced benefit might be drawn as early as age 55.

New electronics school registration Oct. 5, 10

Three Union Carbide employees, James Fowler, Arnold Watson and R.J. Reynolds were graduated recently from the Central Electronics School of Wartburg, as electronic technicians.

The electric technicians' course is divided into six six-month semesters, and new night classes are now being organized. Registration for the new course will be held at 7 p.m. October 5 and 10 at the Central High School, Wartburg. The courses are approved for cost-sharing under the Union Carbide Education Assistance Program.

Additional information may be obtained from T.A. Hickman, telephone extension 3-5762.